CLAIMS

What Is Claimed Is:

1. A method of controlling traction in a vehicle having an articulated suspension, comprising:

determining a performance characteristic of the vehicle;

determining a performance characteristic of at least one of a plurality of wheel assemblies of the articulated suspension;

comparing the performance characteristic of the vehicle and the performance characteristic of the at least one of the plurality of wheel assemblies; and

altering the performance of the vehicle based upon the comparison to affect the vehicle's traction.

2. A method, according to claim 1, wherein:

determining the performance characteristic of the vehicle comprises determining a velocity of the vehicle; and

determining the performance characteristic of the at least one of the plurality of wheel assemblies comprises determining a rotational velocity of the at least one of the plurality of wheel assemblies.

3. A method, according to claim 1, wherein:

determining the performance characteristic of the vehicle comprises a load on a first of a plurality of wheel assemblies; and

determining the performance characteristic of the at least one of the plurality of wheel assemblies comprises a load on another one or more of the plurality of wheel assemblies.

4. A method of controlling traction in a vehicle having an articulated suspension, comprising:

determining a load on each of a plurality of wheel assemblies of the articulated suspension; and

adjusting the articulated suspension such that each of the loads is within a predetermined range.

5. A method, according to claim 4, wherein determining the load comprises sensing a load on each suspension arm of the plurality of wheel assemblies.

6. A method, according to claim 4, wherein determining the load comprises sensing a pressure of each tire of the plurality of wheel assemblies.

7. A method, according to claim 4, wherein adjusting the articulated suspension comprises adjusting the articulated suspension to substantially equalize the loads.

8. A method, according to claim 4, wherein adjusting the articulated suspension comprises articulating at least one of the plurality of wheel assemblies with respect to a chassis of the vehicle.

9. A method, according to claim 4, further comprising determining a lightly loaded wheel assembly of the plurality of wheel assemblies, such that adjusting the articulated suspension comprises articulating the lightly loaded wheel assembly with respect to a chassis of the vehicle.

10. A method of controlling traction in a vehicle having an articulated suspension, comprising:

acquiring load data for a plurality of wheel assemblies of the articulated suspension;

identifying a lightly loaded wheel assembly of the plurality of wheel assemblies from the load data; and

articulating the lightly loaded wheel assembly with respect to a chassis of the vehicle.

11. A method, according to claim 10, wherein acquiring the load data comprises sensing a load on each suspension arm of the plurality of wheel assemblies.

12. A method, according to claim 10, wherein acquiring the load data comprises sensing a pressure of each tire of the plurality of wheel assemblies.

13. A method, according to claim 10, wherein articulating the lightly loaded wheel assembly comprises articulating the lightly loaded wheel assembly to substantially equalize the load on each of the plurality of wheel assemblies.

14. A method of controlling traction in a vehicle having an articulated suspension, comprising:

determining whether forces on each of a plurality of wheel assemblies of the articulated suspension are substantially equal;

determining whether a rotational velocity of each tire of the plurality of wheel assemblies corresponds to a velocity of the vehicle; and

adjusting the articulated suspension such that each of the forces is within a predetermined range if the forces are not substantially equal and at least one of the rotational velocities fails to correspond to the velocity of the vehicle.

15. A method, according to claim 14, wherein determining whether forces on each of a plurality of wheel assemblies of the articulated suspension are substantially equal comprises sensing a load on each suspension arm of the plurality of wheel assemblies.

16. A method, according to claim 14, wherein determining whether forces on each of a plurality of wheel assemblies of the articulated suspension are substantially equal comprises sensing a pressure of each tire of the plurality of wheel assemblies.

17. A method, according to claim 14, wherein adjusting the articulated suspension comprises adjusting the articulated suspension to substantially equalize the forces.

18. A method, according to claim 14, wherein adjusting the articulated suspension comprises articulating at least one of the plurality of wheel assemblies with respect to a chassis of the vehicle.

19. A method, according to claim 14, further comprising determining a lightly loaded wheel assembly of the plurality of wheel assemblies, such that adjusting the articulated suspension comprises articulating the lightly loaded wheel assembly with respect to a chassis of the vehicle.

20. A method, according to claim 14, further comprising reducing the rotational velocity of one of the tires if the forces are substantially equal and the one of the tires has a determined rotational velocity that is greater than that which corresponds to the velocity of the vehicle.

21. A method, according to claim 20, wherein reducing the rotational velocity comprises reducing the rotational velocity of the tire by braking.

22. A method, according to claim 20, wherein reducing the rotational velocity comprises reducing the rotational velocity of the tire by at least partially removing power to the tire.

23. A method, according to claim 20, wherein reducing the rotational velocity comprises reducing the rotational velocity of the tire by regenerative braking.

24. A method of controlling traction in a vehicle having an articulated suspension, comprising:

determining whether a rotational velocity of each tire of a plurality of wheel assemblies of the articulated suspension corresponds to a velocity of the vehicle; and

reducing the rotational velocity of one of the tires if the one of the tires has a determined rotational velocity that is greater than that which corresponds to the velocity of the vehicle.

25. A method, according to claim 24, wherein reducing the rotational velocity comprises reducing the rotational velocity of the tire by braking.

26. A method, according to claim 24, wherein reducing the rotational velocity comprises reducing the rotational velocity of the tire by at least partially removing power to the tire.

27. A method, according to claim 24, wherein reducing the rotational velocity comprises reducing the rotational velocity of the tire by regenerative braking.

28. A system for controlling traction in an vehicle having an articulated suspension, comprising:

means for sensing a loss of traction; and

means for adjusting the articulated suspension to regain traction.

29. A system, according to claim 28, wherein:

the articulated suspension comprises a plurality of wheel assemblies; and

the means for sensing the loss of traction comprises:

a plurality of sensors for sensing loads in a plurality of wheel assemblies; and

a controller for receiving the sensed loads and to determine the loss of traction based on the sensed loads.

30. A system, according to claim 29, wherein the means for sensing the loss of traction further comprises at least one of an odometer, a global positioning system receiver, an inertial measurement unit, a compass, and an inclinometer.

31. A system, according to claim 29, wherein the plurality of sensors is adapted to sense loads in suspension arms of the plurality of wheel assemblies.

32. A system, according to claim 29, wherein the plurality of sensors is adapted to sense air pressure in tires of the plurality of wheel assemblies.

33. A system, according to claim 28, wherein the means for adjusting the articulated suspension comprises the controller, which determines adjustments to be made to the articulated suspension to regain traction and transmits commands corresponding to the adjustments to the articulated suspension system.

34. A system, according to claim 33, wherein:

the articulated suspension comprises a plurality of wheel assemblies;

the vehicle comprises a chassis to which the plurality of wheel assemblies is articulated; and

the control system articulates one or more of the plurality of wheel assemblies with respect to the chassis to regain traction.

35. A system, according to claim 33, wherein:

the articulated suspension comprises a plurality of tires; and

the control system reduces the rotational velocity of one or more of the plurality of tires to regain traction.

36. A vehicle, comprising:

a chassis;

an articulated suspension mounted to the chassis;

means for sensing a loss of traction; and

means for adjusting the articulated suspension to regain traction.

37. A vehicle, according to claim 36, wherein:

the articulated suspension comprises a plurality of wheel assemblies; and

the means for sensing the loss of traction comprises:

a plurality of sensors for sensing loads in a plurality of wheel assemblies; and

a controller for receiving the sensed loads and to determine the loss of traction based on the sensed loads.

38. A vehicle, according to claim 37, wherein the means for sensing the loss of traction further comprises at least one of an odometer, a global positioning system receiver, an inertial measurement unit, a compass, and an inclinometer.

39. A vehicle, according to claim 37, wherein the plurality of sensors is adapted to sense loads in suspension arms of the plurality of wheel assemblies.

40. A vehicle, according to claim 37, wherein the plurality of sensors is adapted to sense air pressure in tires of the plurality of wheel assemblies.

41. A vehicle, according to claim 36, wherein the means for adjusting the articulated suspension comprises the controller, which determines adjustments to be made to the articulated suspension to regain traction and transmits commands corresponding to the adjustments to the articulated suspension vehicle.

42. A vehicle, according to claim 41, wherein:

the articulated suspension comprises a plurality of wheel assemblies; and

the control vehicle articulates one or more of the plurality of wheel assemblies with respect to the chassis to regain traction.

43. A vehicle, according to claim 41, wherein:

the articulated suspension comprises a plurality of tires; and

the control vehicle reduces the rotational velocity of one or more of the plurality of tires to regain traction.